

WHAT IS CLAIMED IS:

1. A negative active material for a lithium secondary battery, comprising a graphite-like carbon material having an intensity ratio $I(110)/I(002)$ of an X-ray diffraction peak intensity $I(002)$ at a (002) plane to an X-ray diffraction peak intensity $I(110)$ at a (110) plane of less than 0.2, the negative active material prepared by

dissolving a ^{coal} ~~coal~~ tar pitch or a petroleum pitch in an organic solvent to remove insoluble components therefrom;

heat-treating the pitch at a temperature in the range of 400 to 450 °C for 4 hours or more under an inert atmosphere to thereby produce at least 50 weight percent of mesophase particles based on the pitch;

coking the pitch including mesophase particles;

carbonizing the coked pitch;

pulverizing the carbonized pitch; and

graphitizing the pulverized pitch.

2. The negative active material of claim 1 wherein the graphite-like carbon material has an intensity ratio $I(110)/I(002)$ of less than 0.04.

3. A lithium secondary battery comprising:

a negative electrode comprising a negative active material;

a positive electrode comprising a lithium containing material that can reversibly intercalate and de-intercalate lithium ion; and

a non-aqueous electrolyte;

the negative active material comprising a graphite-like carbon material having an intensity ratio $I(110)/I(002)$ of an X-ray diffraction peak intensity $I(002)$

at a (002) plane to an X-ray diffraction peak intensity $I(110)$ at a (110) plane of less than 0.2 and the negative active material prepared by

dissolving a ^{coal} ~~coal~~ tar pitch or a petroleum pitch in an organic solvent to remove insoluble components therefrom;

heat-treating the pitch at a temperature in the range of 400 to 450 °C for 4 hours or more under an inert atmosphere to thereby produce at least 50 weight percent of mesophase particles based on the pitch;

coking the pitch including mesophase particles;

carbonizing the coked pitch;

pulverizing the carbonized pitch; and

graphitizing the pulverized pitch.

4. The lithium secondary battery of claim 3 wherein the graphite-like carbon material has an intensity ratio $I(110)/I(002)$ of less than 0.04.

5. A method of preparing a negative active material for a lithium secondary battery, comprising the steps of:

① dissolving a ^{coal} ~~coal~~ tar pitch or a petroleum pitch in an organic solvent to remove insoluble components therefrom;

② heat-treating the pitch at a temperature in the range of 400 to 450 °C for 4 hours or more under an inert atmosphere to thereby produce at least 50 weight percent of mesophase particles based on the pitch;

③ coking the pitch including mesophase particles;

④ carbonizing the coked pitch;

⑤ pulverizing the carbonized pitch; and

⑥ graphitizing the pulverized pitch.

6. The method of claim 5 wherein the inert atmosphere is a gaseous nitrogen or argon atmosphere.

7. The method of claim 5 wherein the mesophase particles are produced by 50 to 98 weight percent based on the pitch.

5 8. The method of claim 5 wherein the coking step is performed at a rising temperature up to 600 °C under an inert atmosphere.

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